2015 E. WACKERLY STREET RESURFACING

CONTRACT NO. 3

March 17, 2015

CITY OF Midland

ENGINEERING DEPARTMENT

BID NO. 3686

2015 E. WACKERLY STREET RESURFACING
CONTRACT NO. 3

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THE AGREEMENT

THIS AGREEMENT, made the _____ day of _____A.D., 2015 by and between _____ hereinafter called the "CONTRACTOR" and the CITY OF MIDLAND, MICHIGAN hereinafter called the "OWNER".

WITNESSETH, that the Contractor and the Owner, for the consideration hereinafter named, agree as follows:

1. It is agreed that the Contractor shall furnish all the material, labor and equipment and perform all the work shown on the drawings and described in the Specifications and as required by the Contract Documents entitled "2015 E. WACKERLY STREET RESURFACING; CONTRACT NO. 3" The Contract Documents hereby defined to include the Agreement, Bonds, Plans and Specifications and any supplements thereto agreed to by both parties.

2. It is agreed that the Owner shall pay the Contractor for his work upon completion in accordance with the attached Specifications and at the unit prices set forth in the attached Proposal, both of which are hereby made part of this Contract.

IN WITNESS WHEREOF, the parties set their hands and seals the day and year first above written.

WITNESSES

_____

_____

CITY OF MIDLAND

BY:_____
Maureen Donker, Mayor

BY: _____
Selina Tisdale, City Clerk

CONTRACTOR

_____

_____

BY:_____

ADDRESS:_____

_____

2015 E. WACKERLY STREET RESURFACING
CONTRACT NO. 3

CITY OF MIDLAND, MICHIGAN

PROPOSAL

TO: THE HONORABLE MAYOR AND CITY COUNCIL
Dear Members of the Council:

The Undersigned has examined the plans, specifications and locations of the work described herein and is fully informed as to the nature of the work and conditions relating to its performance and understands that the quantities shown are approximate only and are subject to either increase or decrease.

The Undersigned hereby proposes to furnish all the necessary machinery, tools, apparatus and other means of construction, do all the work, furnish all materials except as otherwise specified herein, and, for the unit prices names in the Itemized Bid, to complete the work herein described in strict accordance with the plans therefore and in strict conformity with provisions and supplemental specifications as may be a part of this Proposal. The Undersigned further proposes to do such extra work as may be authorized by the City, prices for which are not included in the Itemized Bid. Compensation shall be made on the basis agreed upon before such extra work is begun.

The Undersigned hereby notes receipt of Addendum No's. _____,_____,_____,_____,_____.

- ☐ The Undersigned hereby acknowledges the completion of the enclosed Contractor Safety Qualification Statement on page 7 of these documents. (place an "X" in this box)

The Undersigned encloses a certified check or bid bond in the amount of _____
_____Dollars.
($_____), to the City Treasurer, as required in the specifications as a guarantee of good faith. If the Undersigned is the successful bidder and fails to enter into a contract or to furnish satisfactory bonds to the City of Midland, Michigan within fifteen (15) days after being furnished with necessary Contract and Bond forms, said check or bid bond shall be forfeited to the City of Midland as liquidated damages. It is understood that the checks or bid bonds of the three lowest bidders will not be returned until the Contract has been executed, and that the Proposal guarantee of all except the three lowest bidders will be promptly returned.

In submitting this Proposal, it is understood that the City reserves the right to accept or reject any or all Proposals, to waive irregularities or defects in any and all Proposals and may accept other than low bid when deemed in the City's best interest.

FIRM: _____

BY: _____
(signature)

ADDRESS: _____

_____

City of Midland

Contractor Safety Qualification Statement

Description of work or job name: 2015 E. WACKERLY STREET RESURFACING, CONTRACT NO. 3

Contract Company: _____ Owner/CEO: _____ Phone: _____

Safety Officer:_____ Title: _____ Phone: _____

Contractor experience modification rate (EMR): _____ OSHA Recordable Injury Incident Rate (past year): _____

We have received a written copy of and agree to follow the requirements of the City of Midland's "Contractor Safety Program:"
Yes ❒ No ❒ Comments:

We have an active written safety program which will be provided to City representatives upon request.
Yes ❒ No ❒ Comments:

We understand the essential requirements of the following applicable safety regulations and agree to make a good faith effort to follow them. We further certify that these applicable regulations are readily accessible to employees:

	Yes	N/A		Yes	N/A
a. Use of reflective safety vests	❒	❒	h. Welding and cutting	❒	❒
b. Confined space entry	❒	❒	i. Hazard communication ("right-to-know")	❒	❒
c. Control of hazardous energy	❒	❒	j. Alcohol and drug use	❒	❒
d. Elevated work	❒	❒	k. Bloodborne pathogens	❒	❒
e. Excavations, trenches & shoring	❒	❒	l. Respiratory protection	❒	❒
f. Personal protective equipment	❒	❒	m. Other applicable regulations:		
g. Work area protection and traffic control	❒	❒	_____	❒	❒
			_____	❒	❒

Project-specific concerns of applicable safety regulations and safety control measures will be discussed and documented at the pre-project meeting with City representatives.

Important! *The City reserves the right to request verification, in writing, of the contractor's current safety program, training and certification records, and emergency response plans as applicable to the work being done.*

Other comments: _____

_____

_____

We attest that the above information is true to the best of our knowledge and can be substantiated if requested.

Contract Representative: _____

Title: _____ Date: _____

MI Contractor's License No. (if applicable): _____

Received by:

Contracting Dept.:_____

Name: _____Date: _____

Original to: Contracting Department
Copy to: Contractor

4/05 GP

Contractor Project Safety Plan

To be completed at pre-project meeting along with City contract representative.

Project name: 2015 E. WACKERLY STREET RESURFACING.; CONTRACT NO. 3

Date: _____

*Safety Concerns of the Job (check all that apply)

1. ❒	Traffic control*	9. ❒	Welding and cutting
2. ❒	Hazardous energy	10. ❒	Bloodborne infectious diseases
3. ❒	Excessive noise	11. ❒	Chemical exposures**
4. ❒	Hazardous chemicals	12. ❒	Trenching/excavations
5. ❒	Falling objects	13. ❒	Eye hazards
6. ❒	Confined space	14. ❒	Foot hazards
7. ❒	Elevated work	15. ❒	Hand hazards
8. ❒	Respiratory hazards	16. ❒	Other: _____

* Must attach traffic control plan
** Must have copies of MSDSs for all hazardous chemicals on-site.

Safety Concern # (see above)	Control measures (protective equipment, engineering controls, administrative controls, other measures)

2015 E. WACKERLY STREET RESURFACING
CONTRACT NO. 3

CITY OF MIDLAND, MICHIGAN

ADVERTISEMENT

NOTICE TO CONTRACTORS:

Sealed bids on the "2015 E. WACKERLY STREET RESURFACING; CONTRACT NO. 3", will be received in the office of the City Clerk, in the City Hall, 333 West Ellsworth Street, Midland, Michigan 48640 until 2:00 p.m., March 17, 2015, after which time no further bids will be received. All bids will be publicly opened and read at this time and place. Bids will be tabulated and a contract may be awarded at a later City Council meeting.

CONTRACT NO. 3 is for the resurfacing of E. Wackerly Street from Swede Avenue to Jefferson Avenue. Some of the quantities listed in the Itemized Bid are as follows:

2,500 L.Ft.	Remove & Replace Curb & Gutter
22,400 S.Yd.	Coldmilling Asphalt Pavement (2-1/2")
22,400 S.Yd.	Fiber Reinf. Bituminous Membrane – Type B (Alternate 1)
22,400 S.Yd.	Single Chip Seal – Interlayer Membrane (Alternate 2)
3,360 Tons	Bituminous Pavement

The Proposal, Contract Forms, Plans and Specifications may be examined and obtained at the office of the Purchasing Agent, City Hall, Midland, Michigan OR at the City of Midland Website at www.cityofmidlandmi.gov on the purchasing page.

A certified check or bid bond for a sum of not less than five percent (5%) of the amount of the Proposal will be required with each bid.

The City reserves the right to accept or reject any or all bids, to waive irregularities or defects, and may accept other than the low bid when deemed in the City's best interest.

Selina Tisdale, City Clerk
Midland, Michigan

BID NO. 3686

CITY OF MIDLAND ENGINEERING DEPARTMENT
2015 E. WACKERLY STREET RESURFACING; CONTRACT NO. 3
ITEMIZED BID

NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	M.H. Casting EJ 1040 A	Each	11		
2	C.B. Casting E.J. 7000 M	Each	3		
3	Regrade Drainage Structure	Each	18		
4	Reconstruct Drainage Structure	V.Ft.	5		
5	8" Catch Basin Lead (SDR-35)	L.Ft.	50		
6	Saw-Cutting Bit. Pavement	L.Ft.	600		
7	Saw-Cutting Conc. Walk & Driveway	L.Ft.	200		
8	Remove Bituminous Driveway	S.Yd.	320		
9	Remove Concrete Curb & Gutter	L.Ft.	2,500		
10	Remove Conc. Walks & Drives	S.Yd.	35		
11	Excavation for Sidewalk Ramps	C.Yd.	60		
12	Sub-Grade Undercut	C.Yd.	50		
13	6" Aggregate Base Course	S.Yd.	370		
14	5" Reinf. Conc. Curb & Gutter	L.Ft.	2,500		
15	5" Reinf. Concrete Sidewalk Ramp	S.Ft.	50		
16	Sidewalk Ramp Warning Plate (24 x 60")	Each	4		
17	5" Reinf. Concrete Drive	S.Ft.	280		
18	Coldmilling Asphalt Pavement (2-1/2")	S.Yd.	22,400		
19	Bit. Top Course Mix #2	Ton	3,360		
20	Bit. Top Course Mix #2 - Driveways	Ton	57		
21	Traffic Control	L.Sum	1		
22	4" Pavement Marking, Yellow	L.Ft.	4,700		
23	4" Pavement Marking, White	L.Ft.	300		
24	24" Pavement Marking, Stop Bar	L.Ft.	35		
25	Specialized Markings - Paint - ONLY w/Arrow	Each	4		
26	4" Outlawn	S.Yd.	275		
27	Hydroseeding	S.Yd.	275		
28	Catch Basin Sedimentation Bags	Each	36		
				TOTAL BASE BID	

ALTERNATE 1 BID:

29	Fiber Reinf. Bit. Membrane, Type B	S.Yd.	22,400		
				TOTAL BASE BID (From Above):	
				TOTAL ALTERNATE 1 BID:	

ALTERNATE 2 BID:

30	Single Chip Seal - Interlayer Membrane	S.Yd.	22,400		
				TOTAL BASE BID (From Above):	
				TOTAL ALTERNATE 2 BID:	

2015 E. WACKERLY STREET RESURFACING
CONTRACT NO. 3

LIST OF SUBCONTRACTORS

NOTE: THIS SHEET MUST CONTAIN ALL SUBCONTRACTORS WHO WILL PERFORM OVER $5,000 WORTH OF WORK ON THIS CONTRACT. NON-SUBMITTAL OF THIS INFORMATION MAY CONSTITUTE AN INCOMPLETE BID AND MAY BE GROUNDS FOR DISQUALIFICATION.

SUBCONTRACTOR	TYPE OF WORK	VALUE OF WORK

CONTRACTOR

_____

SCOPE OF WORK:

This project consists of coldmilling and resurfacing of E. Wackerly Street from Swede Avenue to Jefferson Avenue. The project includes the reconstruction of curbs and sidewalks ramps. Following curb replacement, the existing pavement surface shall be coldmilled to a depth of 2-1/2", followed by the installation of a membrane layer as determined. The street shall then receive Bituminous Top Course Mix at a rate of 220 lbs. per sq. yd. Contractor to produce clean vertical surfaces at the milling project limits for the top course to match into.

This project shall also include regrading and replacing manhole and catch basin castings as identified by the Engineer, and regrading to meet final pavement surface grade. Concrete curb replacement shall be accomplished by removal of the existing curb and forming the curb to the edge of the existing pavement surface (8" deep), instead of removing the pavement for concrete forms. ADA sidewalk ramps shall be installed at locations shown or directed. Concrete driveways and sidewalk ramps shall be replaced with a 5" reinforced concrete surface. Bituminous driveways shall be replaced with 6" aggregate base and 3" of bituminous top course.

Alternate bid items are included as part of this Contract. Two Alternate items are to be included with the bid; including "Fiber Reinforced Bituminous Membrane, Type B" and "Single Chip Seal – Interlayer Membrane". The Engineer will determine which alternate to use prior to contract award.

PROGRESS SCHEDULE:

The bidder is directed to the provisions of Section 1.03.02 which shall be a prior condition to the execution of the Contract. Prior to the beginning of work, the successful bidder, along with representatives of the City, Consumers Energy and A.T.&T. shall meet at a mutually agreeable time to discuss coordination of schedules in order that the successful bidder may comply with the requirements of Section 1.03.02 of the General Conditions.

The entire project shall be completed on or before June 30, 2015.

No work will be allowed May 29-30, 2015, during which time all lanes of traffic and driveways shall remain open and be accessible to traffic.

PROJECT INSPECTION:

The City of Midland will be overseeing and inspecting this project. The City will schedule personnel to complete the inspection services during the Contract progress schedule shown above at 50 hours per week. If the Contractor and/or Sub-Contractors work more than 50 hours per week, inspection services will be charged against the Contractor at a rate of $90 per hour. All inspection hours required after the completion date shown above, the Contractor will be charged $60 per hour up to 40 hours in one week and then the rate will be increased to $90 per hour to cover overtime charges. The amount of the extra inspection charges above the 50 hours per week and any inspection required after the completion date will be deducted from the Contractors payment.

PAYMENT:

The Contractor's attention is directed to Section 1.09.07 for provisions pertaining to progress payments under this Contract.

TRAFFIC REQUIREMENTS:

All Streets affected by this Contract shall remain open to business traffic and local residential traffic during the completion of this project. All temporary signing and barricades within or associated with the project shall be the responsibility of the Contractor and shall conform to the requirements for construction signing in the current edition of the Michigan Manual of Uniform Traffic Control Devices. Street and lane closures shall be the responsibility of the Contractor. The Contractor shall submit a traffic control plan at the pre-construction conference for approval by the Engineer. Temporary traffic control signs indicating work on Wackerly Street are to be placed at the intersection of Swede and Wheeler and at the intersection of Jefferson and Wheeler as depicted on the detail sheet. No work shall

commence until proper signing and barricading is in place and verified by the Engineer. The Contractor shall be responsible for furnishing, installing and maintaining all construction and detour signs. Contractor is responsible for maintaining a minimum of one shared lane for traffic. If one shared lane of traffic is used, the Contractor is responsible for providing certified flagging operation. The cost for providing flaggers and related appurtenances is included in the lump sum price bid for Traffic Control/Roadway Maintenance.

TEMPORARY ROADWAYS AND DRIVEWAYS:

The Contractor shall maintain a temporary roadway and driveway surfaces to homes and businesses affected by this project. The Contractor is required to maintain the temporary roadway and driveways in a serviceable condition until final road and driveway reconstruction is complete. The cost for this work is included lump sum price bid for Traffic Control/Roadway Maintenance.

SAW CUTTING PAVEMENT:

The price bid per lineal foot of "Saw-Cutting Bit Pavement" shall include the full depth saw cutting of the existing bituminous roadway pavement and driveways. The price per lineal foot of "Saw-Cutting Conc. Walks & Drives" shall include the full depth saw cutting of concrete curb, sidewalks and concrete driveways. Measurement and payment for this item is dependent upon the surface material type.

BUTT JOINTS FOR BITUMINOUS PAVING:

Butt joints shall be saw cut into the existing asphalt pavement to provide a neat ending joint for the new pavement and to eliminate the need for feathering the new asphalt surface. The cost of making the butt joints shall be considered incidental to the paving.

DISPOSAL OF MATERIALS AND PAVEMENT REMOVAL:

All excess excavation and roadway material which will not be used on this project shall be disposed of by the Contractor. Material removed from the excavation, that will not be used on this project shall be removed from the site immediately upon excavation. No temporary stock piles will be permitted. Removal of the existing bituminous pavement on streets, driveways and parking lots not included in the itemized bid shall be considered incidental. Disposal, including any applicable landfill use fees, of all removal items and excess excavation shall be the Contractor's responsibility.

SOIL EROSION AND SEDIMENTATION CONTROL:

The Contractor shall conduct his operations so as to minimize soil erosion and sedimentation into surface water courses and storm sewers. The Contractor shall be responsible for installing all of the soil erosion control measures in accordance with contract plans, bid items and the details shown herein. The unit price bid for each "catch basin sediment bags" shall include furnishing all materials and installation of the sediment traps and catch basin sediment bags at the locations within the project influence area, and all maintenance required. All aggregate, sand and soil stockpiles created by the Contractor for the completion of this project shall be surrounded with silt fence to eliminate the possibility of erosion and the cost thereof shall be the responsibility of the Contractor. The price bid for each "catch basin sediment bags" shall include the installation and maintenance of sediment trapping bags installed inside the catch basin and shall be Mirafi Dandy Bag II or approved equal. All erosion control measures shall be removed after turf establishment has occurred and shall be included in the unit price bid for installation of each item.

DRAINAGE STRUCTURE REGRADES:

Existing castings shall be salvaged and re-used on this project. The bid item for each "Regrade Drainage Structure" shall include adjusting the top of the masonry structure to the finished grade, with casting installed. The method for regrading shall include the placement of precast reinforced concrete adjusting rings in accord with ASTM C-478. Brick will not be allowed for regrades. The casting and all adjusting rings and 6" of the original structure shall be covered with a mastic patching and surfacing compound material at a thickness of $1/8^{TH}$ inch. The mastic material shall be Tremco Inc. TREM proof 250 GC-R or approved equal. Prior to the mastic setting-up, a minimum of an 18" wide piece of external pipe joint material meeting Mirafi 140 shall be wrapped around the circumference of the structure and shall overlap at least 6" installed around the top of the structure and casting to seal the joint from water entering the sewer system. The structure shall be cleaned thoroughly prior to placing the mastic material. All Manhole castings and all Catch Basin Castings removal and replacement shall be determined by the Engineer. The cost for each "Regrade Drainage Structure" shall also include replacement of 6" Aggregate Base Course (22A crushed limestone) and 2" of Bituminous Leveling Course to the level of the bottom of the new wearing course. Regrades shall not be paid for new structures.

COLDMILLING SPECIFICATIONS:

The Contractor's attention is directed to Section 4.00 of the specifications for coldmilling. Coldmilling depth is to be 2 and ½ inches. Coldmilling is to be completed after removal and replacement of curb, and prior to placement of the fiber reinforced bituminous membrane. Measurement and payment will be on the square yard basis.

BITUMINOUS PAVEMENT SPECIFICATIONS:

The Contractor's attention is directed to Section 4.00 of the Specifications. The City has adopted the Marshall Stability design method favored by MDOT, but the Contractor should note that the specifications do not necessarily copy those of MDOT and that the Master Design Mix (Table 1) defines the mix specified on the plans or on the Itemized Bid sheet. The provisions for penalties exist for bituminous mixes exceeding the tolerance limits permitted by the specifications.

FIBER REINFORCED BITUMINOUS MEMBRANE - ALTERNATE:

Contractor to provide an Alternate Bid of "Fiber Reinforced Bituminous Membrane, Type B".
See supplemental special provision Fiber Reinforced Bituminous Membrane – Type B.

SINGLE CHIP SEAL – INTERLAYER MEMBRANE - ALTERNATE:

Contractor to provide an Alternate Bid of "Single Chip Seal – Interlayer Membrane". If accepted, the chip seal is to be used in place of the "Fiber Reinforced Bituminous Membrane, Type B". If the alternate chip seal item is accepted, there will be no measurement or payment for the "Fiber Reinforced Bituminous Membrane, Type B". The Engineer will make a determination prior to contract award. "Single Chip Seal – Interlayer Membrane" is to be in accordance with MDOT 2012 Standard Specifications for Construction, section 505 "Chip Seal", with the following modifications: Asphalt Emulsion Application Rate of 0.39 to 0.46 gallons per square yard is to be replaced with the application rate of 0.44 to 0.46 gallons per square yard. Measurement and Payment will be "Single Chip Seal – Interlayer Membrane" per square yard.

CONCRETE CURB & GUTTER INSTALLATION:

The price bid per lineal foot of "Remove Concrete Curb & Gutter" shall include the cost of removing curb required for the installation and construction of new curbs and placement of a temporary aggregate base to allow access to driveways. No pavement will be removed for the installation of the new curb. Commercial driveways are to be modified industrial driveway opening curb and gutter detail. All curb and gutter and concrete flatwork construction shall take place prior to coldmilling. Only damaged curb

will be replaced. Curb removal locations shown are approximate, final curb removal and installation locations will be located by the Engineer prior to removal and replacement.

SUBGRADE UNDERCUT:

The price bid per cubic yard of Sub-grade Undercut Excavation shall include excavation of unsuitable roadway sub-base material as determined by the Engineer and replacement with Class II sand and replacement of the aggregate base with crushed pavement material and replacement of bituminous material to surrounding bituminous surface elevation.

PAVEMENT MARKING:

The price bid for the items "Pavement Marking" shall include all equipment, materials and labor to place pavement markings as shown on the plans or as specified. All pavement marking shall be in accordance with Sections 6.40 and 6.41 and 6.43 of the City of Midland Standard Specifications. All lane striping shall be 4" wide unless otherwise specified. Specialized markings, including but not limited to arrows, shall be paint.

DRIVEWAYS:

Existing drive approaches shall be removed and replaced to line and grade as determined by the Field Engineer. The existing driveway shall be saw-cut prior to removal of the driveway to insure a clean butt joint for the placement of the new approach. Commercial property with a single driveway shall have approach work completed half at a time to allow traffic to enter and exit property. Traffic control required to accommodate driveway work and access is included in the lump sum price bid for Traffic Control/Roadway Maintenance.

SIDEWALK RAMP, ADA, 5 INCH:

The price bid per square foot of "Sidewalk Ramp, ADA, 5 inch" shall include the cost of minor excavation to achieve the desired grade and construction the sidewalk ramps to a depth of 5" with steel 6"x6" 10 Gauge woven wire mesh reinforcement. Sidewalk ramps are to be 5 feet in width.

All ramps shall receive Armor-Tile Tactile Systems Vitrified Polymer Composite replaceable cast in place detectable warning plates as shown on the detail sheet contained herein. The warning plates shall be 24"x60" Colonial Red in color. These shall be installed as per the manufacturer's recommendations. These shall be paid for at the unit price bid per each "Sidewalk Ramp Warning Plate (24"x60")".

OUTLAWN:

All landscaping and outlawn areas disturbed by the Contractor's operations, which will not receive pavement or concrete, shall be restored to a condition equal to or better than prior to construction. Any area disturbed by the Contractor's operations shall be backfilled, covered with 4" of screened topsoil, neatly graded, prepared as described in Section 6.53.03 (Outlawn) of these Specifications, and hydroseeded. A GRADE INSPECTION SHALL BE PERFORMED AND APPROVED BY THE FIELD ENGINEER PRIOR TO PLACEMENT OF ANY HYDROSEED.

SAFETY:

The Contractor shall be responsible for complying with all current laws and regulations pertaining to Personal Protective Equipment, Manhole (Confined Space) Entry, Trenching and Shoring, Workzone Traffic Control, etc. as outlined in the Contractor Safety Qualifications Statement. Prior to commencement of work, the Contractor shall provide copies of their safety policy and manual and those for all subcontractors for information and reference. Indicate name and position of company safety officer and dates of regular safety meetings.

CONFINED SPACE ENTRY CONTRACTOR OBLIGATIONS:

The City of Midland is in compliance with Occupational Safety and Health Standard, Part 1910, regarding permit-required confined space entry. A copy of the City of Midland Master Plan for Permit-Required Confined Space Entry can be obtained from the City Personnel Department in City Hall, 333 W. Ellsworth Street.

All contractors or sub-contractors conducting permit-required confined space entry shall have a written permit-required program meeting requirements of 29 CFR 1910.46 and shall provide written proof of that program with the bid documents. Contractors shall comply with the requirements of Part 1910 and all other State and Federal laws concerning confined space entry at all times.

FIRST AID TRAINING:

The Contractor shall have a person on site at all times that has a valid certificate in first aid training. The certificate shall be from the American Red Cross or equivalent training program. A first aid kit shall be provided at the job site and shall be inspected weekly to assure that used items are replaced. This is a requirement of MIOSHA Rule 132.

MICHIGAN RIGHT TO KNOW LAW AMENDMENT TO ACT 154 (86 p.a. 80):

Hazardous Materials:

It is the responsibility of the Contractor to provide the Purchasing Agent or applicable department head with the following information:

- Hazardous chemicals to which City employees may be exposed to while on the job site.
- Steps the Contractor has taken to lessen the risks.
- Measures that City employees may take to lessen the risks.
- Procedures to follow if City employees are exposed.

The Contractor must provide an inventory list of all hazardous materials used on the job site during the term of the contract. This list must be attached to the contract/bid proposal document.

This list shall include, but is not limited to:

Fuels, lubricants, pipe, pipe mastics, pipe lubricants, cements, and asphalt materials.

The successful bidder shall provide the City Purchasing Agent or applicable department head with Material Safety Data Sheets (MSDS's) for all hazardous materials to be used on the job site prior to the start of work.

2015 E. WACKERLY STREET RESURFACING

CONTRACT NO. 3

HAZARDOUS MATERIALS INVENTORY

Product	Company	Address

Engineering Department ~ City Hall ~ 333 West Ellsworth Street ~ Midland, Michigan 48640-5132 ~ 989-837-3348 ~ www.cityofmidlandmi.gov

Date	Contract Name	Contract #
	2015 E. WACKERLY STREET RESURFACING	3

Check	Soil Conditions
☐	Compaction
☐	Depth
☐	Grading
☐	Quality/Condition
☐	Weeds/Debris

_____ has met the required Soil Conditions, as indicated above, and is
Contractor

authorized to place Hydro Seed on _____.
Location

_____ _____
Contractor's authorized representative's signature Inspector's signature

CITY OF MIDLAND

SPECIAL PROVISION
FOR
FIBER REINFORCED BITUMINOUS MEMBRANE, TYPE B,

MID:JNF 02-26-15
JAK:JRP 1 of 9 APPR:JWB:CJB:12-29-14

a. Description. This work consists of furnishing all materials, equipment, labor, and preparation necessary for the application of a fiber reinforced bituminous membrane used as a stress absorbing membrane interlayer (Type B) as detailed on the plans. The applied material must completely seal the entire pavement surface and provide a uniform textured surface, suitable for placement of a top course material as detailed on the plans.

b. Materials. The materials must meet the following requirements.

1. Furnish asphalt emulsion meeting the requirements of Table 1 and in accordance with the certification procedures described in the MDOT *Materials Quality Assurance Procedures Manual*.

2. Ensure coarse aggregates for fiber reinforced bituminous membrane that are not provided by a prequalified aggregate supplier are tested materials. Ensure all aggregate meets the gradation and physical requirements in Table 2.

3. Ensure glass fiber is E Class from an approved source. Ensure the glass fiber spools are supplied internally wound, in coils or “cheeses”, cut in place into 2.4 inch (60mm) lengths and distributed uniformly across and between the two parallel applications of modified asphalt emulsion. Ensure glass fiber spread rates are up to 4 oz/syd (120g/m2), with additional asphalt emulsion rates of spread, depending on the site requirements.

Table 1: Fiber Reinforced Bituminous Membrane - Emulsified Asphalt

Emulsion: (a)	**Minimum**	**Maximum**	**ASTM Method**
Viscosity, Saybolt Furol, 50°C, sec	75	400	*D 88*
Storage Stability, 24 hr, % Difference		1	*D 244*
Demulsibility, %, 35ml 0.8% Dioctyl Sodium Sulfosuccinate	50		*D 244*
Particle Charge	Positive		*D 244*
Sieve Tests, %		0.1	*D 244*
Distillation Residue, wt.% (b)	68		*D 244*
Oil in Distillate		3.0	*D 244*
Emulsion Residue:	**Minimum**	**Maximum**	**ASTM Method**
Penetration, 25°C, 100 g, 5 sec. Dmm	70	100	*D 5*
Ductility, 25°C, 5cm/min., cm	40		*D 113*
% Solubility in Trichloroethylene	97.5		*D 2042*
Ash Content, %		2	*D 128*
Elastic Recovery, 10°C, %	75		*D 6084*
Toughness	9.0		*D 5801*
Tenacity	7.0		*D 5801*
Dynamic Shear Rheometer, 64°C, G*/Sin delta	Report		*D 6373*
DSR, 64°C, delta, degrees	Report		*D 6373*

a. Samples of emulsified asphalt will be taken in accordance with *ASTM D 140*. Samples must be stored at a temperature of not less than 4°C until tested.
b. Residue determination and preparation may use the alternate *ASTM D 244* method, “Residue by Evaporation” so as to not destroy the properties of any polymer modifiers contained therein.

Table 2: Gradation and Physical Requirements for Fiber Reinforced Bituminous Membrane Aggregate

Sieve Analysis (MTM 109), Total Percent Passing (a)		
Sieve Size		**Type B**
3/4 inch		100
1/2 inch		95-100
No. 4		5-25
No. 8		0-10
No. 200 (Loss by Wash)		2.0 maximum
Physical Requirements for Coarse Aggregate		
Test	**Description**	**Specification**
MTM 102	L.A. Abrasion Resistance	40% maximum
MTM 117	Percent of Crushed Particles	100%
MTM 110	Deleterious Particles in Aggregate	1.0% maximum (b)
MTM 111 (c)	Aggregate Wear Index (AWI)	260 minimum
AASHTO T104	Sodium Sulfate Soundness Test, 5 Cycle	15

a. All aggregate must be washed.
b. Includes the sum of shale, silt stone, structurally weak and clay ironstone.
c. For surface course, does not apply to interlayer

c. Equipment. Secure the Engineer's approval for all equipment required for completion of the work prior to beginning construction. Furnish an accurate thermometer, hand brooms, and other small tools and equipment essential for the completion of the work. Maintain equipment in satisfactory operating condition throughout the life of the project.

1. Pressure Distributor/Applicator. Furnish pressure distributor/applicator equipped, maintained and operated as follows:

A. Pressure distributor equipped with a computerized rate control that automatically adjusts the distributor's pump to the ground speed;

B. Pressure distributor capable of heating and re-circulating the bituminous binder to the specified temperature;

C. Nozzles suitable for the specified material and application rate;

D. Two spray bars, one in front of and one behind, the fiber applicator housing;

E. Fiber cutter and distributor configured as an integrated unit;

F. Integrated applicator comprised of an open-bottom spray bar housing and a fan or blower capable of producing a down draft in the housing;

G. Multiple openings in the open bottomed housing for dispensing cut glass fiber onto the surface of the previously sprayed binder material;

H. Integrated applicator calibrated within the previous 12 months for transverse and longitudinal distribution application rates according to *ASTM D 2995* or other suitable method;

I. Bituminous fiber applicator capable of applying bituminous materials at controlled rates of 0.22 gallon (gal) per square yard (syd) (1.0 l/m^2) to 0.56 gal/syd (2.7 l/ m^2);

J. Capable of applying fiber at rates of 1 ounce (oz)/syd to 4 oz/syd; and

K. Capable of applying a uniform first layer of asphalt emulsion followed by a uniform layer of chopped-in-place glass fibers, followed by a uniform second layer of asphalt emulsion.

2. Aggregate Spreader. Furnish and use a self propelled aggregate spreader equipped with hoppers, revolving cylinders, and adjustments necessary to produce a uniform distribution of material at the specified rate.

3. Compacting Equipment. Furnish and use a minimum of two self-propelled pneumatic-tired rollers, each weighing not less than 8 tons.

4. Brooms. Furnish and use motorized brooming equipment capable of cleaning the road surface prior to treatment and removing loose particles after treatment. Pick-up sweepers must be used to clean road surfaces in areas adjacent to lawns or roadways with curb and gutter.

5. Miscellaneous. Equip self-propelled equipment with at least one Engineer approved, flashing, rotating or oscillating amber light, visible to traffic in all directions. Equip chip spreaders with one such light on each side of the spreader.

d. Construction.

1. Pre-Paving Meeting. A pre-paving meeting between the Engineer and Contractor will be held on-site prior to beginning work. The agenda for this meeting includes:

A. Review work schedule;

B. Examine traffic control plan;

C. Review equipment calibrations and adjustments;

D. Inspect condition of equipment, including transport units;

E. Submission of “Design for Intended Yield,” containing the aggregate gradation, L.A. Abrasion Resistance, loose unit weight, and application rate of asphalt emulsion, fiber glass, and aggregate;

F. Discuss the quality control plan; and

G. Designation of Contractor's authorized representative.

2. Temperature and Weather Limitations. Do not place fiber reinforced bituminous membrane under the following temperature or weather conditions;

A. When the pavement and ambient air temperatures are less than 55 degrees F;

B. When the existing pavement temperature is 130 degrees F or above;

C. When air temperature below 40 degrees F are forecast to occur within 24 hours of completing work; or

D. When weather is foggy or rainy.

3. Seasonal Limitations. Do not place fiber reinforced bituminous membrane outside the following seasonal limits:

A. May 15 – September 1

4. General Placement Operation.

A. Establish stations at 100-foot intervals on the entire project prior to placing the treatment. Maintain stationing until the project is complete.

B. Complete all surface preparation that may affect the performance of the fiber reinforced bituminous membrane. Clean all pavements to be treated with a motorized power broom to remove all loose material. Use a hand broom to clean all cracks and other areas not reached by the power broom. Pick-up sweepers must be used to clean road surfaces in areas adjacent to lawns or roadways with curb and gutter.

C. Operate vehicles and equipment involved in the fiber reinforced bituminous membrane as close to each other as practical. Ensure the aggregate covers the asphalt emulsion within 30 seconds of applications. Do not allow the aggregate spreader to trail the emulsion distributor by more than 150 feet, to ensure proper asphalt/aggregate adhesion.

D. Roll the aggregate after spreading. Do not allow more than 2 minutes between spreading the aggregate and completing the initial rolling of the aggregate. Ensure rollers proceed in a longitudinal direction at 5 miles per hour or less. Make three complete passes over the aggregate with each roller, with the final pass being in the direction of the chip spreader.

E. Use the appropriate sweeping equipment to perform an initial sweeping before opening to traffic to remove excess loose aggregate within the construction traffic control zone. If additional sweeping is necessary, use an arrow board in bar mode, pulled behind a trailing vehicle. Ensure sweeping is sufficient to prevent migration of loose aggregate back onto any part the pavement. A pick-up sweeper shall be used to remove loose aggregate in areas adjacent to lawns, curbs or intersections.

F. Coordinate placement of fiber reinforced membrane interlayer and top course material to allow sufficient curing time for the fiber reinforced membrane interlayer before opening to traffic. Place top course material over fiber reinforced membrane interlayer within 48 hours.

G. Protect all utility castings and raised pavement markers, using tarpaper or other approved materials, prior to beginning the fiber reinforced bituminous membrane operation. Remove protective coverings prior to sweeping and opening to traffic.

H. Do not allow traffic, including contractor's equipment, on the new surface until it has cured sufficiently to prevent pickup by vehicle tires. Repair traffic damage to the new surface at no additional cost to the contract.

I. Plan the work so that all lanes are treated to approximately the same point at the end of each day's operation.

J. Use a pressure distributor to apply fibers and bituminous materials in a uniform, continuous spread over the section to be treated and within the specified temperature range. Sandwich the chopped-in-place fibers between the two layers of asphalt emulsion. Ensure the pressure distributor is moving forward at the proper application speed before opening the spray bar and fiber chopper bars. If any skipped areas or deficiencies occur, immediately stop the operation and correct the application process. Correct deficient areas in a manner approved by the Engineer. Make junctions of spreads carefully to ensure a smooth riding surface.

K. Stockpile and load the coarse aggregate in a manner that permits ready identification of material and minimizes segregation and contamination of the aggregate. Ensure the moisture content of the coarse aggregate is below 4 percent throughout the project. Spread coarse aggregate uniformly at the specified rates, without ridges or gaps. Adjust aggregate spread to minimize excess loose particles and to provide complete coverage after rolling. Conduct the spreading operation so that the tires of trucks or the spreader do not come into contact with the newly applied bituminous material.

L. Apply emulsion for fiber reinforced bituminous membrane-Type B at a rate of 0.40 gal/syd to 0.55 gal/syd (tolerance of 0.02); and apply fiber at a rate of 2 oz/syd to 4 oz/syd.

Apply aggregate, at a rate recommended by the supplier of the fiber reinforced bituminous membrane binder, to produce a completed surface with no exposed binder. Ensure that the supplier of the fiber reinforced bituminous membrane binder determines the application rate for emulsion and aggregate based on the existing pavement condition and aggregate size. Report this information to the Engineer prior to beginning work and include aggregate gradation for the job specific materials.

e. Quality Control. Establish, follow, and maintain an effective quality control system, in compliance with current Department procedures contained in, but not limited to, the MDOT Construction Manual and the MDOT Quality Assurance Procedures Manual, until work is accepted in accordance with this special provision. The quality control system must detail plans, procedures, and organization necessary to produce a fiber reinforced bituminous

membrane that complies with the contract.

Allow the Engineer access to all work in progress for the purpose of assurance review and testing.

Prepare a Contractor quality control plan adequate to ensure that the warranty related treatment complies with the contract. The plan must cover all fiber reinforced bituminous membrane operations. Submit a copy of the plan to the Engineer for approval at the pre-construction meeting. Comply with the approved plan throughout the project.

1. Quality Control Plan Minimum Content. Ensure the quality control plan addresses the following items, at a minimum:

A. Materials used on the project;

B. Sampling and testing methods used to determine compliance with material specifications;

C. Equipment used on the project;

D. Calibration method used to determine compliance with the application rates;

E. Procedures for pavement cleaning and preparation;

F. Controls implemented to ensure that the fiber reinforced bituminous membrane material is cured or set up satisfactorily before opening to traffic; and

G. Proposed procedure for monitoring initial acceptance requirements.

2. Coarse Aggregate. Collect one sample each day of production from the project aggregate stockpile, and perform a sieve analysis. This test result must meet the requirements of Table 2 and be within the quality control tolerances of Table 3 to substantiate the Design for Intended Yield.

Table 3: Quality Control Tolerances

Sieve Size	Tolerance
1/2 inch	±5.0 percent
No. 4	±5.0 percent

3. Emulsion. Apply the asphalt emulsion at a temperature between 150 degrees F and 180 degrees F.

4. Unsatisfactory Conditions Requiring Corrective Action. If there are adverse environmental conditions, the Contractor must provide the Engineer an action plan that clearly demonstrates how the fiber reinforced bituminous membrane operation will be adjusted for the actual environmental conditions.

If a condition is identified that causes an unsatisfactory condition as described herein, stop production work immediately and take corrective action. Complete required corrective action at no additional cost to the contract.

A. Visible Dust. During normal traffic operations, any dust that is a nuisance or even slightly impairs visibility is unsatisfactory; wet broom or lightly fog seal the roadway until the condition is eliminated. If dusty conditions cannot be controlled by other means, pre-coat the aggregate with 0.75 percent, by mass, of residual asphalt. Perform pre-coating in either a weight-batch type, continuous mixing type, or drum type hot mix plant. Use either MDOT asphalt binder (PG 64-22) or emulsion (CSS-1h) for pre-coating.

B. Loose Stone. During normal traffic operations, any stone picked off the surface by vehicles is unsatisfactory; broom or fog seal the roadway until the condition is eliminated.

C. Bleeding or Tracking. During normal traffic operations, any bleeding or moderate tracking is unsatisfactory; sand the roadway and sweep clean until the condition is eliminated. If bleeding or tracking cannot be controlled by other means, apply, roll, and broom a heated aggregate meeting the physical properties of Table 2 to the surface of the roadway.

D. Rough Joints. Bumpy or poor riding transverse or longitudinal construction joints resulting from fiber reinforced bituminous membrane application are unsatisfactory; grind the surface to remove the bump and lightly apply a fog seal over the ground area.

E. Surface Patterns. An asymmetric appearance to the fiber reinforced bituminous membrane surface, characterized by longitudinal grooves or ridges in the surface, is unsatisfactory; readjust the spray bar and nozzles to eliminate the surface pattern problem.

f. Documentation.

1. Submit a daily report to the Engineer that includes the following information:

A. Control section/project number/county/route/Engineer;

B. Date/detailed weather information/pavement temperature;

C. Asphalt emulsion application temperature;

D. Beginning and ending stations for placement and brooming;

E. Design for Intended Yield: gradation and application rate per course for coarse aggregate, asphalt emulsion, and fiberglass;

F. Yield checks (one per day, minimum);

G. Aggregate gradation and moisture content (one per day, minimum);

H. Length/width/total square yards placed; and

I. Signature of Contractor's Authorized Representative.

2. Submit the following other required project documentation to the Engineer:

A. Aggregate Certification or Shipment of Tested Stock Report (MDOT Form 1900);

B. Asphalt emulsion documentation in accordance with current Department acceptance procedures;

C. Bill of ladings for coarse aggregates and asphalt emulsion; and

D. Changes in the Design for Intended Yield.

g. Initial Acceptance. The initial acceptance for Fiber Reinforced Bituminous Membrane, Type B, must occur prior to application of a top course.

h. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	**Pay Unit**
Fiber Reinf Bit. Membrane, Type B ……..	Square Yard

Fiber Reinf Bituminous Membrane, Type B, includes all materials, equipment, labor for placement of a fiber reinforced bituminous membrane interlayer to a pavement and the accompanying shoulders as specified on the plans. The unit price also includes all materials sampling and testing, surface preparation, brooming, and documentation.

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B12

Project: East Wackerly St (in front of 609) Project No: 14-490-267

Location: Midland, Michigan Client: City Of Midland

Description of Material	DEPTH (ft)	Sample Length	Sample I.D.	Sample Type	Standard Penetration 'N' Blows Per Ft.	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight γ (pcf)
Driller reported 7 inches of bituminous PAVEMENT. overlaying 4 inches of crushed limestone BASE COURSE (GP-BASE COURSE)										
Fine SAND; trace silt and gravel – brown – moist to wet (SP)			S1	SS	F					
Silty CLAY; trace sand and gravel – mottled; brown and gray – very stiff (CL)			S2	SS	22	3			14	
Boring Terminated at 5 feet	5									
F = FROZEN	10									

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS

2 1/2' While Sampling or Drilling

NONE Immediately After Completion

___ @ ___ After Completion

BORING

Rig: AFT Drilling Foreman: B. BELLOWS

Started: 02/22/2015 Drawn By: C. MARKHART

Completed: 02/22/2015 Approved: M. STALEY

SHEET

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SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B13

Project: East Wackerly St (in front of 1007) Project No: 14-490-267

Location: Midland, Michigan Client: City Of Midland

Description of Material	DEPTH (ft)	Sample Length	Sample I.D.	Sample Type	Standard Penetration 'N' Blows Per Ft.	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight γ (pcf)
Driller reported 6 inches of bituminous PAVEMENT. overlaying 5 inches of sandy gravel BASE COURSE (GP-BASE COURSE)										
Fine SAND; trace silt and gravel – brown – loose moist to wet (SP)			S1	SS	F					
	5		S2	SS	8					
Boring Terminated at 5 feet										
	10									
F = FROZEN										

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS

2 1/2' While Sampling or Drilling

NONE Immediately After Completion

. @ . After Completion

BORING

Rig: AFT Drilling Foreman: B. BELLOWS

Started: 02/22/2015 Drawn By: C. MARKHART

Completed: 02/22/2015 Approved: M. STALEY

SHEET

13 of 30

SNYDER & STALEY ENGINEERING, P.L.C.

SOIL BORING LOG

Boring No: B14

Project: East Wackerly St (in front of 1318) Project No: 14-490-267

Location: Midland, Michigan Client: City Of Midland

Description of Material	DEPTH (ft)	Sample Length	Sample I.D.	Sample Type	Standard Penetration 'N' Blows Per Ft.	Hand Penetrometer qp (tsf)	Unconfined compression qu (tsf)	Torvane Shear cs (tsf)	Moisture Content w (%)	Natural Unit Weight γ (pcf)
Driller reported 7 inches of bituminous PAVEMENT. overlaying 5 inches of crushed limestone BASE COURSE (GP–BASE COURSE)										
Fine SAND; trace silt and gravel – brown – medium dense – moist to wet (SP)			S1	SS	F					
	5		S2	SS	11					
Boring Terminated at 5 feet	10									

F = FROZEN

NOTE: Changes in soil stratification indicated by lines are approximate. In situ, the transition between materials maybe gradual unless otherwise noted. The bored hole was backfilled with natural soil.

WATER LEVEL OBSERVATIONS

4' While Sampling or Drilling

NONE Immediately After Completion

. @ . After Completion

BORING

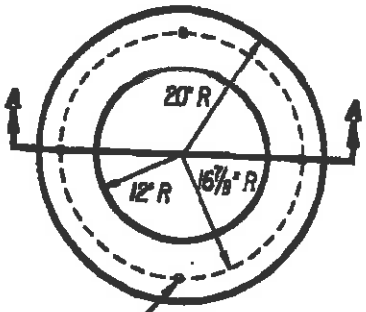
Rig: AFT Drilling Foreman: B. BELLOWS

Started: 02/22/2015 Drawn By: C. MARKHART

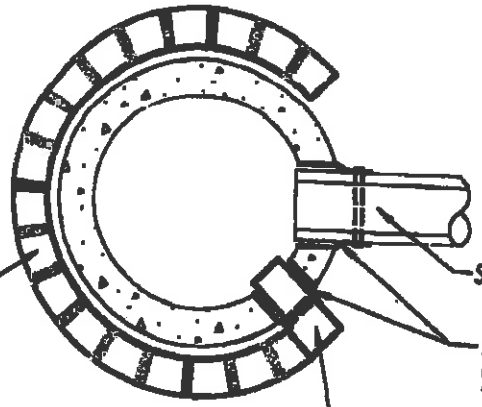
Completed: 02/22/2015 Approved: M. STALEY

SHEET

14 of 30



¾" HOLE THRU ADJUSTING RING FOR BOLT DOWN TYPE CASTING TYP - 4 PLACES, EQUALLY SPACED



INSTALL 4" CORRUGATED HDPE UNDERDRAIN W/ FILTER CLOTH AROUND STRUCTURE

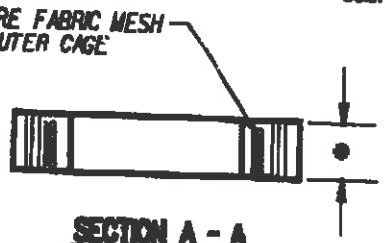
STORM SEWER PIPE

FLEXIBLE, WATER TIGHT GASKET-TYPE CONNECTION "KOR-N-SEAL" OR APPROVED EQUAL

90° ELBOW

SECTION A - A

COAT TOP OF STRUCTURE, ADJUSTING RINGS, AND CASTING WITH A 1/8" THICK LAYER OF TREMCO INC. "TREM PROOF 250 GC-R" EPOXY PATCHING AND SURFACING COMPOUND.



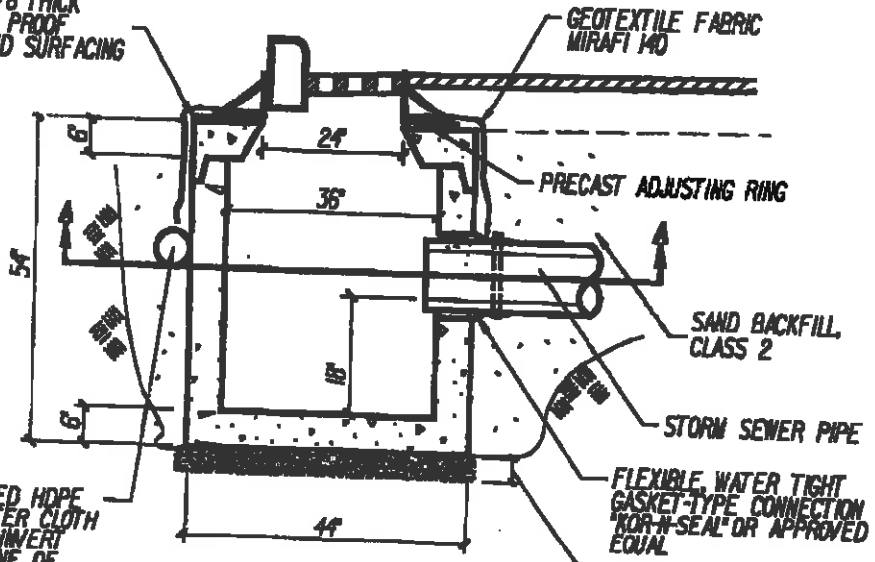
240" WELDED WIRE FABRIC MESH TYPICAL IN & OUTER CAGE

SECTION A - A

- ADJUSTING RINGS AVAILABLE IN 2", 3", 4" & 6" HEIGHTS

NOTE:

ADJUSTING RINGS TO BE MANUFACTURED TO ASTM C-478 SPECIFICATIONS

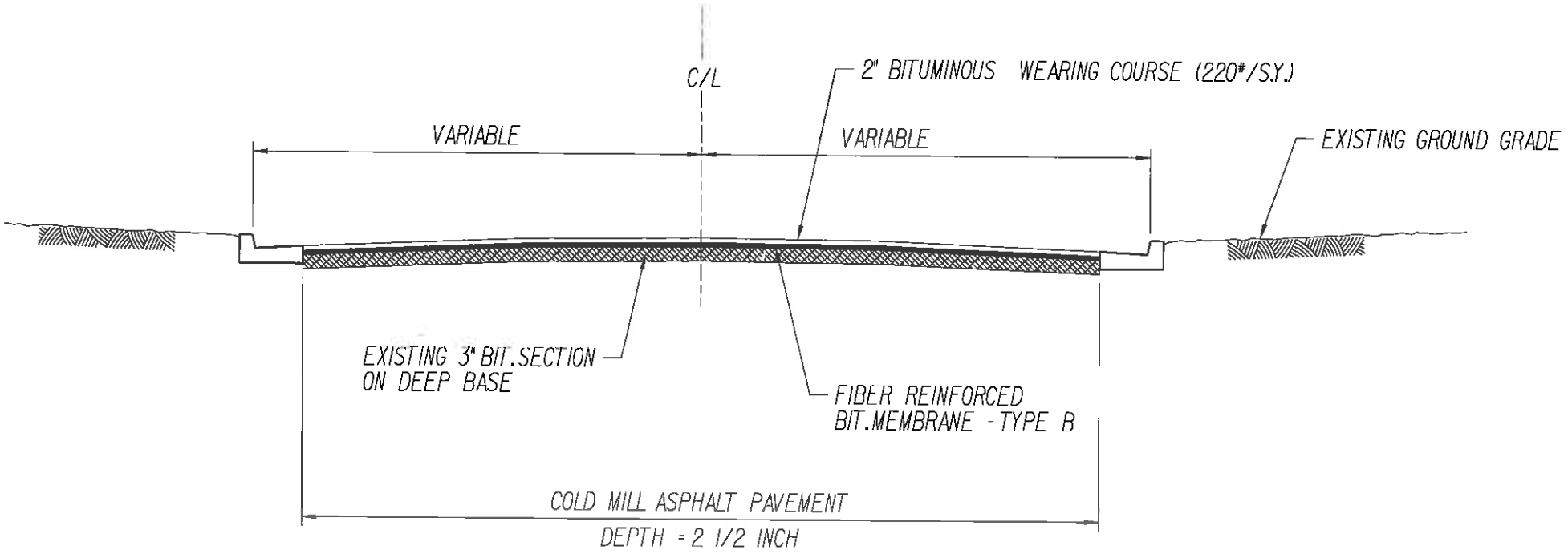


INSTALL 4" CORRUGATED HDPE UNDERDRAIN W/ FILTER CLOTH AROUND STRUCTURE. INVERT TO MATCH SPRING LINE OF CATCH BASIN LEAD.

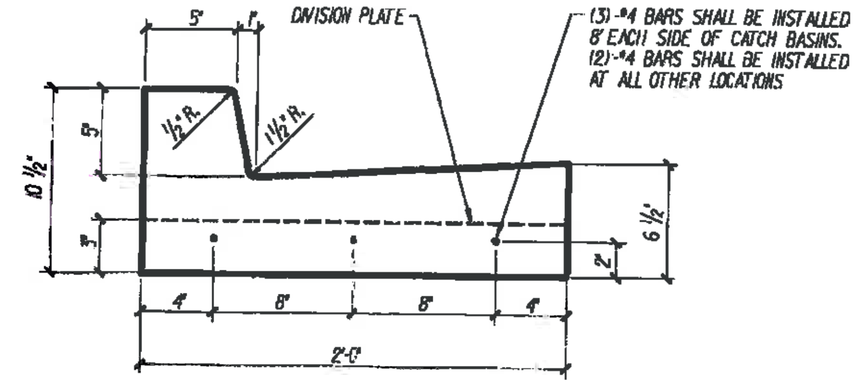
PRECAST CONCRETE ADJUSTING RING

STANDARD CATCH BASIN

CASTINGS FOR STANDARD 5" CURB SHALL BE E.J. 7000-M
CASTINGS FOR MOUNTABLE CURB SHALL BE E.J. 7420

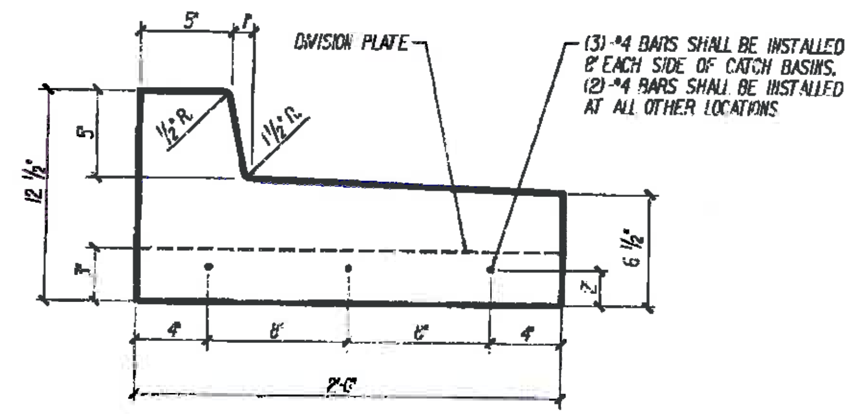


TYPICAL PAVEMENT SECTION



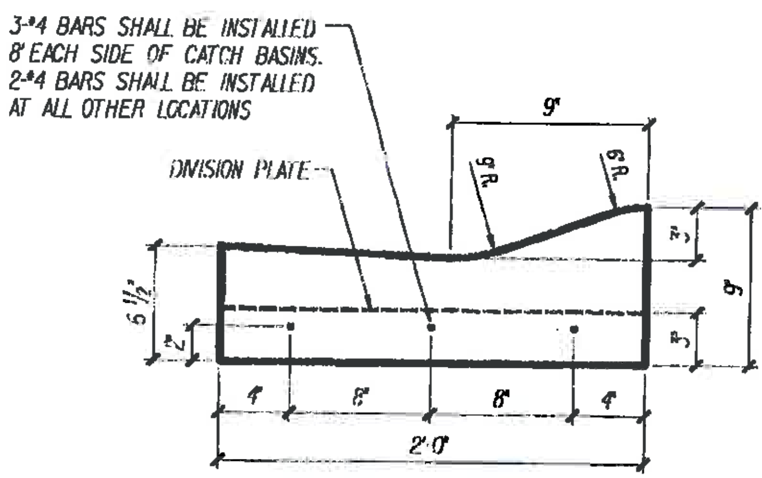
5" STANDARD CURB & GUTTER DETAIL

(END AREA = 1.17 S.Ft.)



5" INVERTED CURB & GUTTER DETAIL

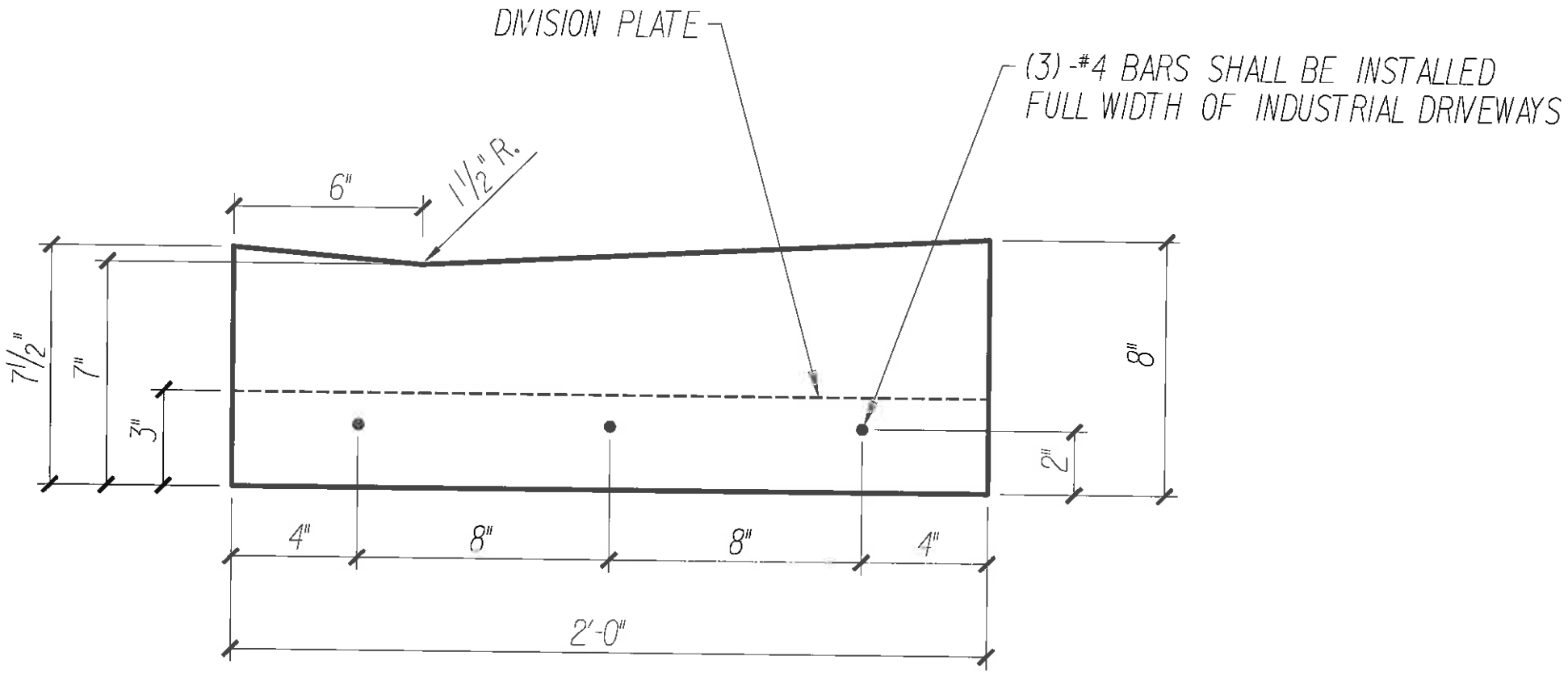
(END AREA = 1.33 S.Ft.)



MOUNTABLE CURB DETAIL

WITH E.J.W. 7420 CASTING

(END AREA = 1.13 S.Ft.)

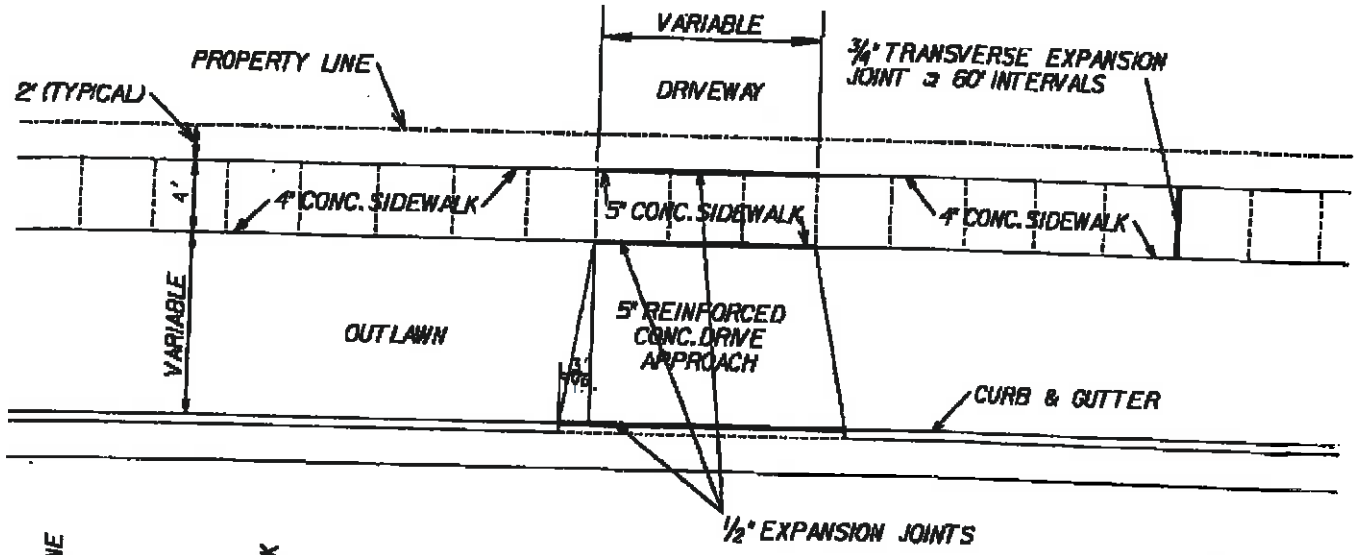


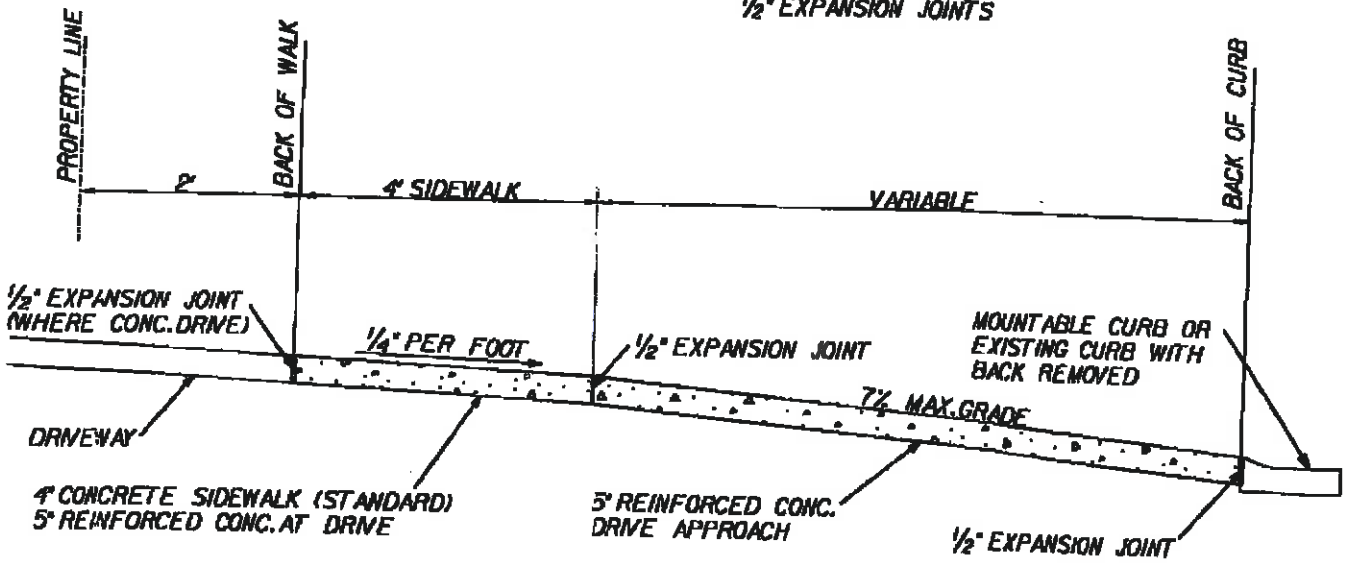
MODIFIED INDUSTRIAL DRIVEWAY OPENING CURB & GUTTER DETAIL

(END AREA = 1.24 S.Ft.)

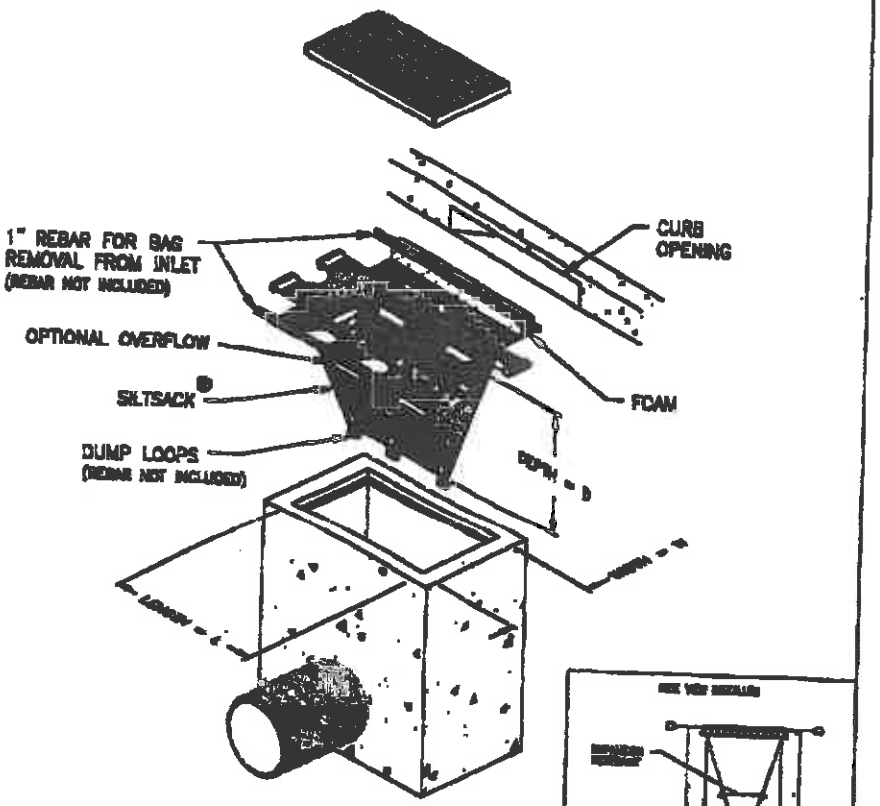
CITY OF MIDLAND

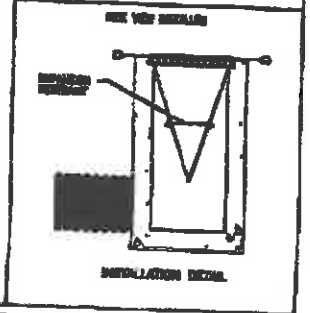
TYPICAL RESIDENTIAL DRIVEWAY AND SIDEWALK CONSTRUCTION DETAIL





TYPICAL SECTION AT DRIVEWAYS





DETAIL OF INLET SEDIMENT CONTROL DEVICE WITH CURB DEFLECTOR

PROJECT:		
CITY:		DR. BY:
STATE:	DATE:	DR. NO:

SILTSACK®

SPECIFICATIONS

NOTE: THE SILTSACK® WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

REGULAR FLOW SILTSACK®

(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	200 Lbs
GRAB TENSILE ELONGATION	ASTM D-4632	15 %
PUNCTURE	ASTM D-4833	100 Lbs
MULLEN BURST	ASTM D-3786	300 PSI
TRAPEZOID TEAR	ASTM D-4533	80 Lbs
UV RESISTANCE	ASTM D-4355	70 %
APPARENT OPENING SIZE	ASTM D-4751	#30
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

HI-FLOW SILTSACK®

(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	250 Lbs
GRAB TENSILE ELONGATION	ASTM D-4632	15 %
PUNCTURE	ASTM D-4833	120 Lbs
MULLEN BURST	ASTM D-3786	350 PSI
TRAPEZOID TEAR	ASTM D-4533	100 Lbs
UV RESISTANCE	ASTM D-4355	70 %
APPARENT OPENING SIZE	ASTM D-4751	#30
FLOW RATE	ASTM D-4491	80 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.0 SEC -1

OIL-ABSORBANT SILTSACK®

(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

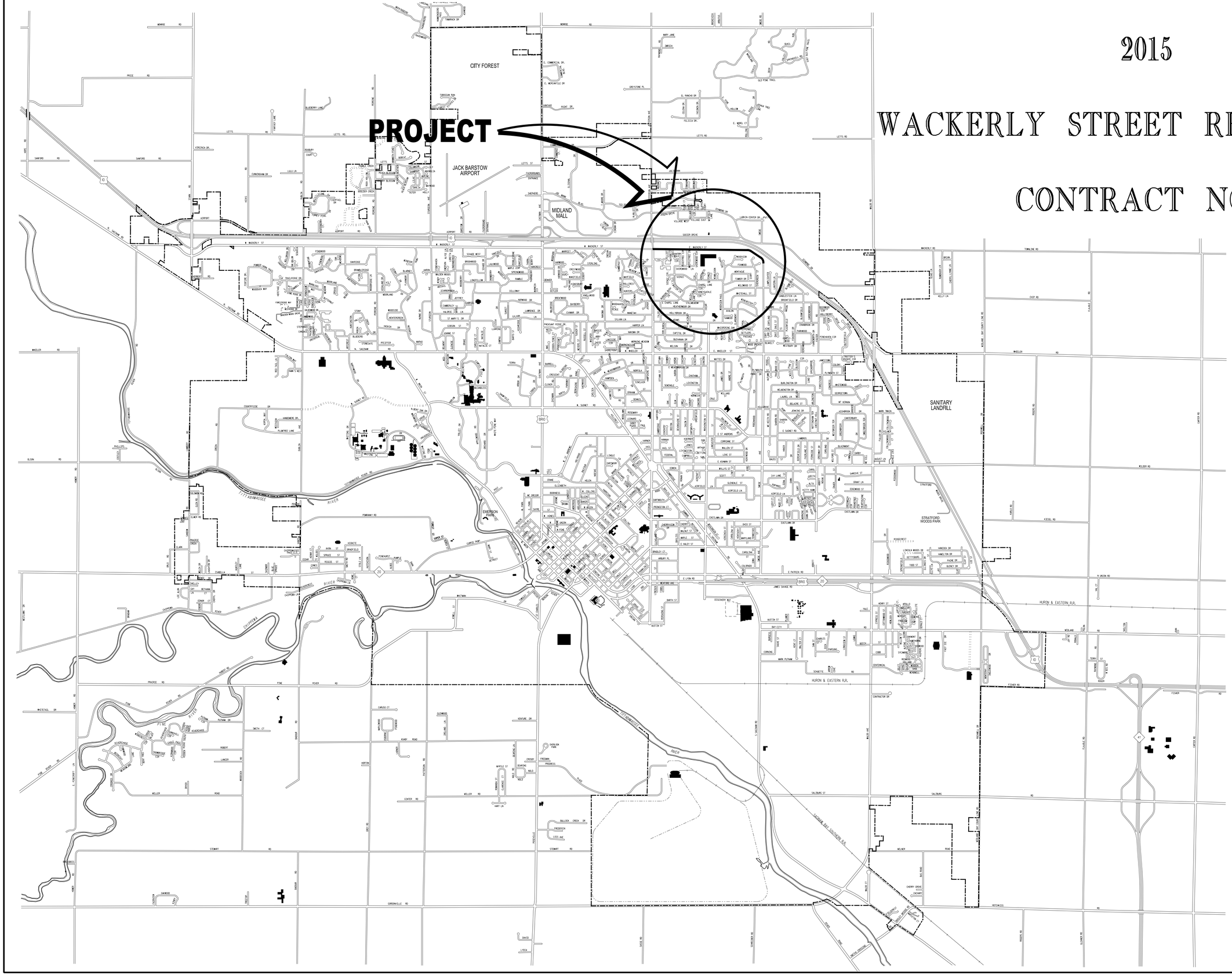
DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK® CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK® WITH A WOVEN PILLOW INSERT.

2015

WACKERLY STREET RESURFACING

CONTRACT NO. 3

PROJECT



BENCHMARKS

30D NAIL N FACE PP (#33100) SW QUAD JEFFERSON/WACKERLY ELEV 649.10

RR SPIKE PP @ WHINE PARTY STORE N SIDE E WACKERLY 700'+/- E OF JEFFERSON ELEV 648.81

PK NAIL N FACE LP SE QUAD WACKERLY/JEFFERSON ELEV 655.67

PK NAIL NW FACE PP @ SW CORNER PARKING LOT #111 E.WACKERLY (BELTONE) ELEV 649.00

TOP HYDRANT (2013) 550'+/- E OF JEFFERSON SOUTH SIDE E WACKERLY ELEV 650.14

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE TO CITY OF MIDLAND STANDARD SPECIFICATIONS.
2. FOR PROTECTION OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL DIAL 1-800-482-7171 A MINIMUM OF 3 WORKING DAYS PRIOR TO EXCAVATION IN THE VICINITY OF UTILITY LINES.
3. ALL DRAINAGE STRUCTURES IN PROJECT INFLUENCE AREA TO RECEIVE CATCH BASIN SEDIMENTATION BAGS

BENCHMARKS

TOP CONCRETE ROW MARKER S.E.CORNER JEFFERSON & WACKERLY ELEV.646.54 (2013)

TOP CONCRETE ROW MARKER S.W.CORNER JEFFERSON & WACKERLY ELEV. 648.60

CITY OF MIDLAND, MICHIGAN APPROVAL FOR CONSTRUCTION	CITY OF MIDLAND, MICHIGAN APPROVAL FOR CONSTRUCTION
CITY ENGINEER — DATE	SOIL EROSION AND SEDIMENTATION CONTROL ADMINISTRATOR — DATE

DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS
				2005	CONST. RIGHT TURN LANES ON WACKERLY
				1994	CONSTRUCTED NEW STREET
		2013	16" HDPE WATERMAIN 31+39 ACROSS HWY 10	1/4/94	CONSTRUCTED SAN. & STM. SEWER
			TO CINEMA DR	11/70	INSTALLED WATER MAIN
		2013	16" DIWM JEFFERSON TO ELLIOT CT		DGN. BY: DR' BY:
		2013	12" DIWM INDIAN RIDGE TO JEFERSON		SCALE: 1" = 40' HOR'. 1" = 4' VERT'.

CITY OF MIDLAND, MICHIGAN
ENGINEERING DEPARTMENT

COMBINED PLAN

WACKERLY ROAD

JEFFERSON AVE. TO SWEDE RD.

SHEET 1 OF 5 SHEETS | 2015 PROJECT | 3

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE TO CITY OF MIDLAND STANDARD SPECIFICATIONS.
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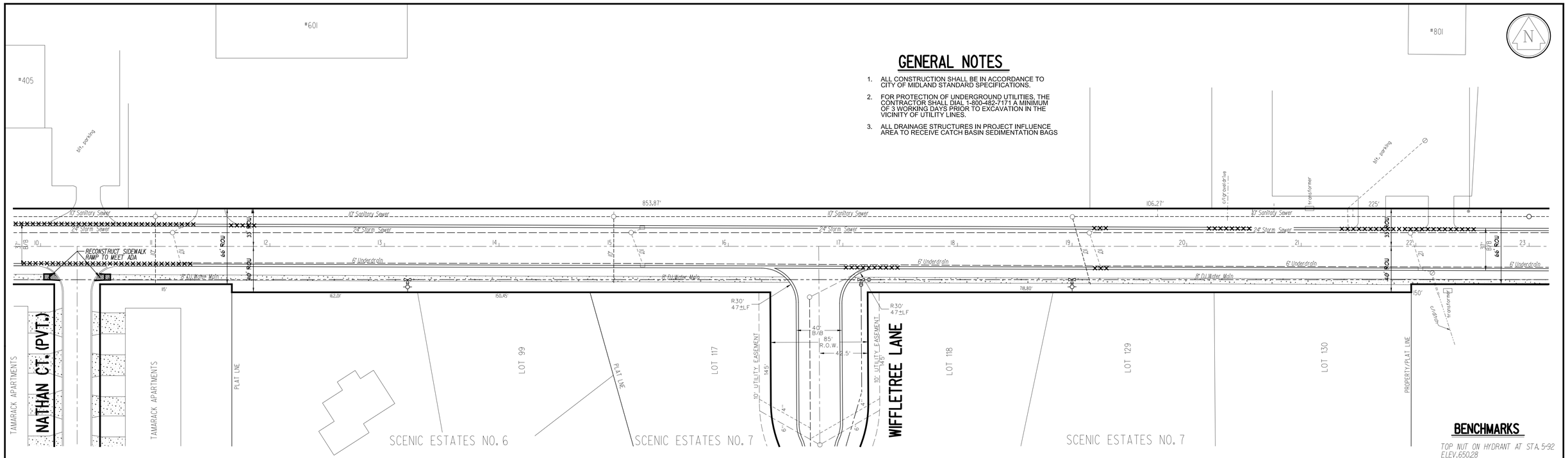
3. ALL DRAINAGE STRUCTURES IN PROJECT INFLUENCE AREA TO RECEIVE CATCH BASIN SEDIMENTATION BAGS



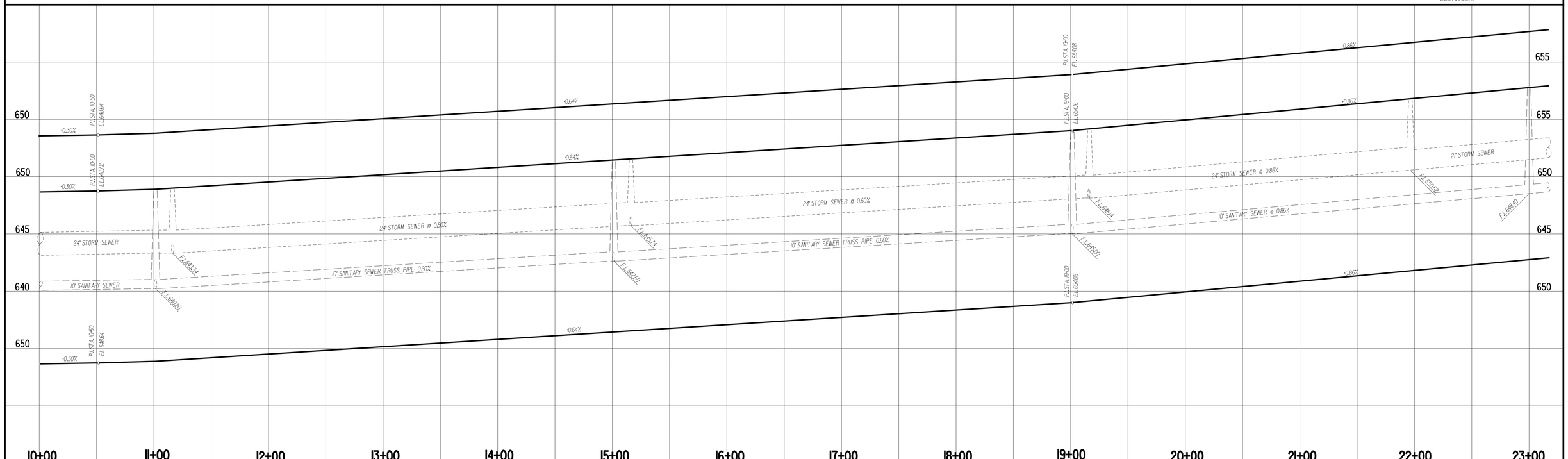
WACKERLY ROAD

BENCHMARKS

TOP NUT ON HYDRANT AT STA. 5+92
ELEV. 650.28

"M" ON HYDRANT AT STA. 13+22
ELEV. 653.30

"M" ON HYDRANT AT WEST END OF TENNIS CENTER
ELEV. 662.47



CITY OF MIDLAND, MICHIGAN
APPROVAL FOR CONSTRUCTION

CITY ENGINEER _____ DATE _____

CITY OF MIDLAND, MICHIGAN
APPROVAL FOR CONSTRUCTION

SOIL EROSION AND SEDIMENTATION CONTROL ADMINISTRATOR _____ DATE _____

DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS
				11/94	SANITARY & STORM INSTALLED, &
					CONSTRUCTED NEW STREET
				11/70	WATER MAIN INSTALLED
					DGN. BY: DR' BY:

SCALE: 1" = 40' HOR'. 1" = 4' VERT'.

CITY OF MIDLAND, MICHIGAN
ENGINEERING DEPARTMENT

COMBINED PLAN
WACKERLY ROAD
JEFFERSON AVE. TO SWEDE RD.

SHEET 2 OF 5 SHEETS | 2015 PROJECT (3)

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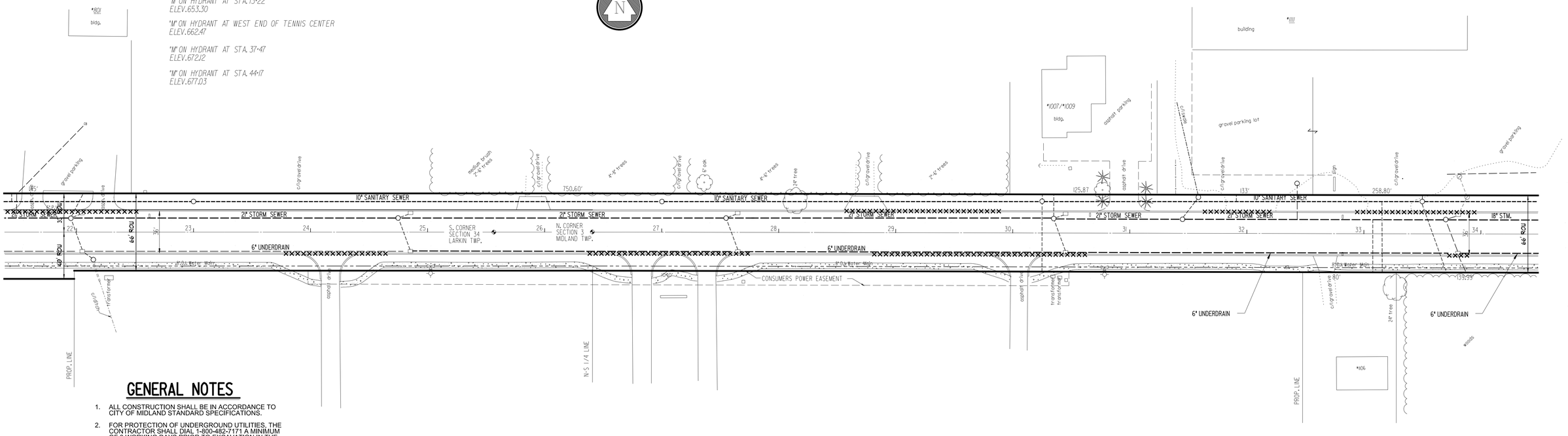
BENCHMARKS

"M" ON HYDRANT AT STA. 13+22
ELEV. 653.30

"M" ON HYDRANT AT WEST END OF TENNIS CENTER
ELEV. 662.47

"M" ON HYDRANT AT STA. 37+47
ELEV. 672.12

"M" ON HYDRANT AT STA. 44+17
ELEV. 677.03



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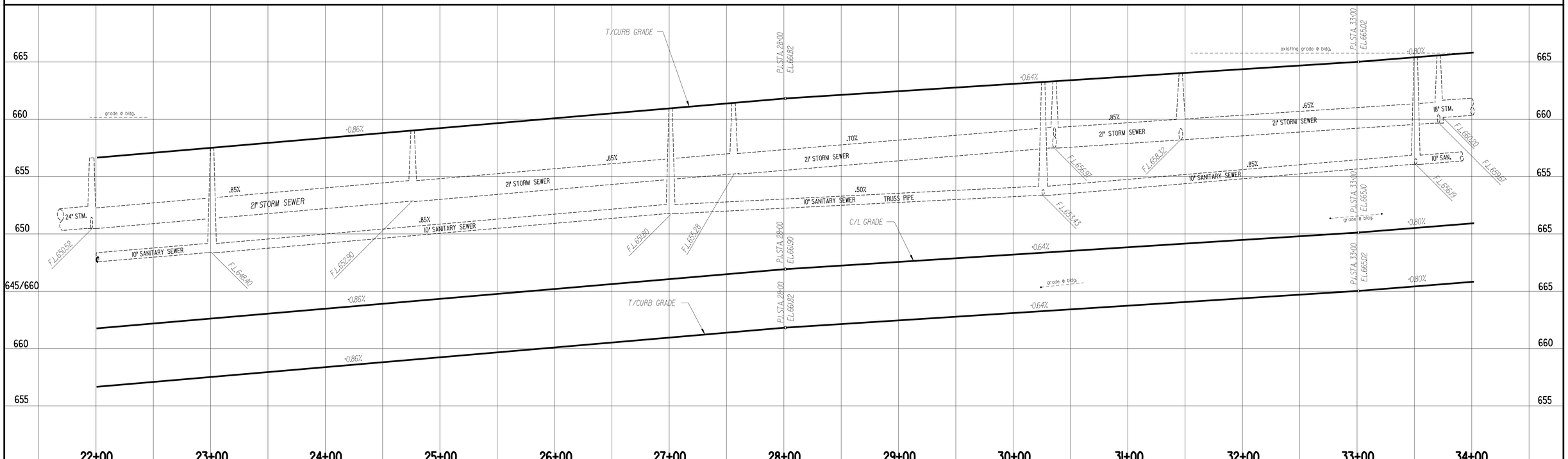
WACKERLY ROAD



CITY OF MIDLAND, MICHIGAN APPROVAL FOR CONSTRUCTION		CITY OF MIDLAND, MICHIGAN APPROVAL FOR CONSTRUCTION	
CITY ENGINEER	DATE	SOIL EROSION AND SEDIMENTATION CONTROL ADMINISTRATOR	DATE

DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS
		1/94	CONSTRUCTED NEW STREET &		
			STORM & SANITARY INSTALLED		
		11/70	WATER MAIN INSTALLED		
				DGN. BY: R.L.C.	DR' BY:
			CJW	SCALE: 1" = 40' HOR'. 1" = 4' VERT'.	

CITY OF MIDLAND, MICHIGAN
ENGINEERING DEPARTMENT

COMBINED PLAN
WACKERLY ROAD
JEFFERSON AVE. TO SWEDE RD.

SHEET 3 OF 5 SHEETS | 2015 PROJECT (3)

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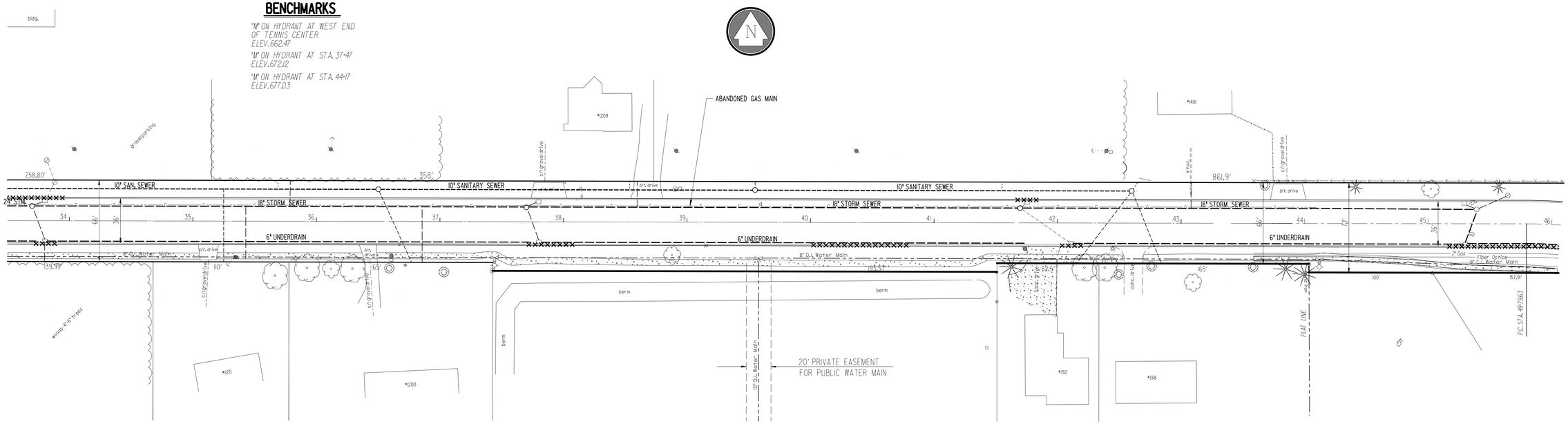
BENCHMARKS

"M" ON HYDRANT AT WEST END OF TENNIS CENTER
ELEV.662.47

"M" ON HYDRANT AT STA. 37+47
ELEV.672.12

"M" ON HYDRANT AT STA. 44+17
ELEV.677.03



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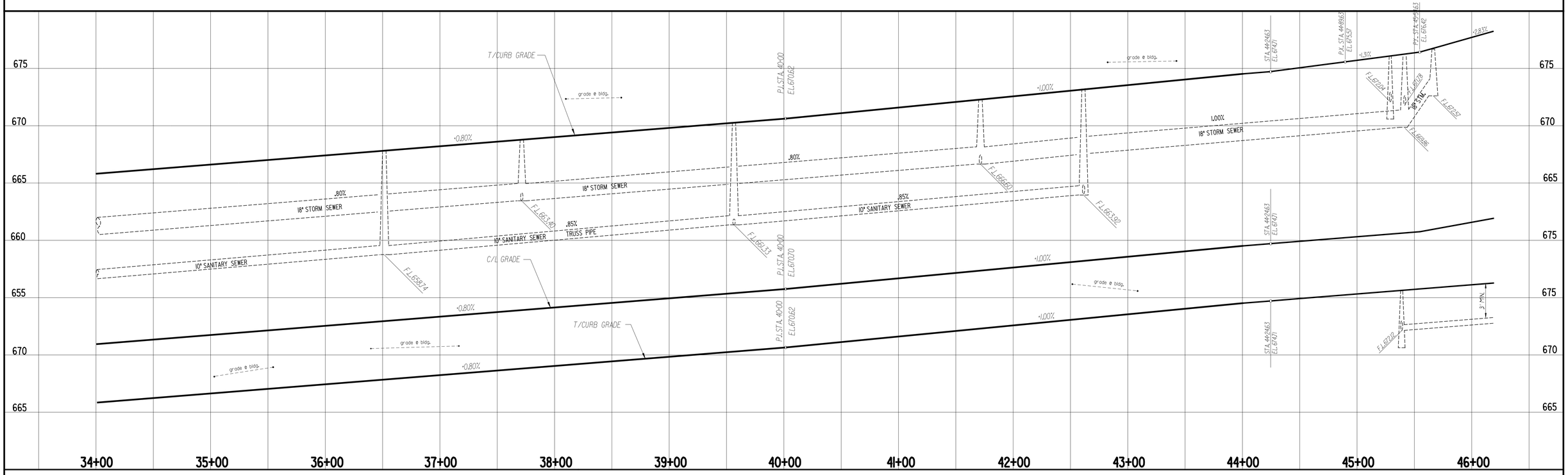
WACKERLY STREET



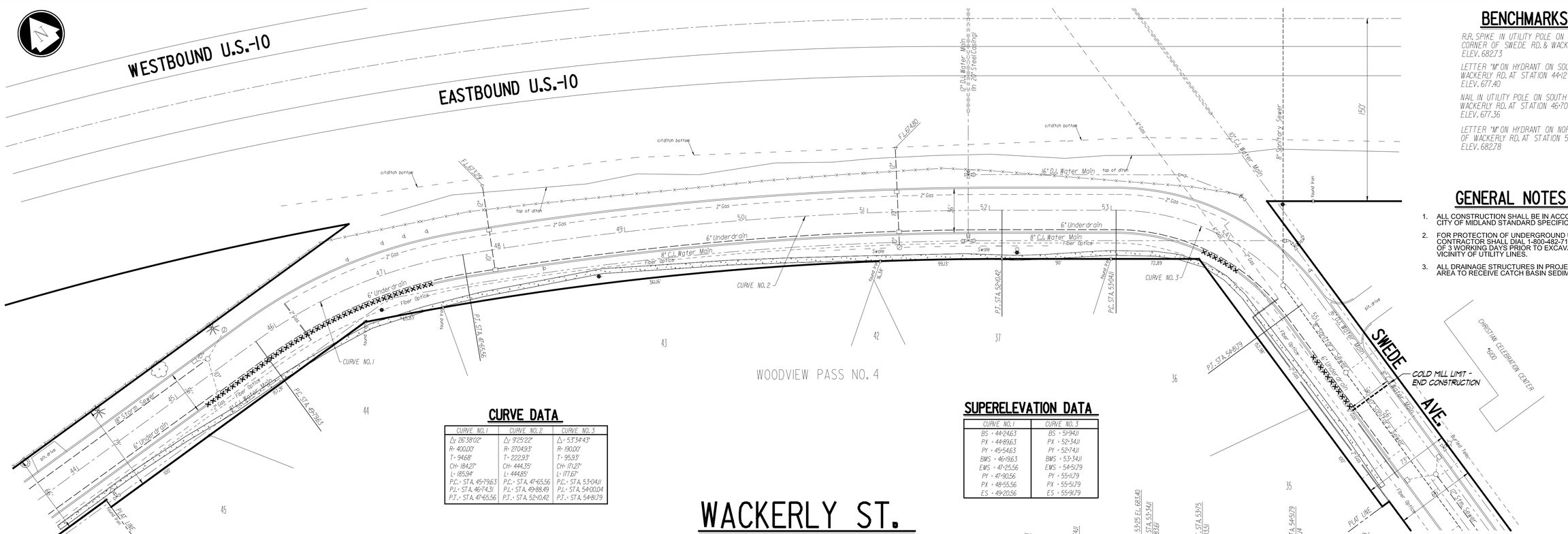
CITY OF MIDLAND, MICHIGAN APPROVAL FOR CONSTRUCTION		CITY OF MIDLAND, MICHIGAN APPROVAL FOR CONSTRUCTION	
CITY ENGINEER	DATE	SOIL EROSION AND SEDIMENTATION CONTROL ADMINISTRATOR	DATE

DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS
		1/94	STORM & SANITARY INSTALLED, &		
			CONSTRUCTED NEW STREET		
		11/70	INSTALLED WATER MAIN		
		2002	RECONSTRUCTED STREET FROM		
			STA. 44+25 TO STA. 56+25 IN 2002	DGN. BY: R.L.C.	DR' BY: R.L.C.
				SCALE: 1" = 40' HOR'. 1" = 4' VERT'.	

CITY OF MIDLAND, MICHIGAN
ENGINEERING DEPARTMENT

COMBINED PLAN
WACKERLY ROAD
JEFFERSON AVE. TO SWEDE RD.

SHEET 4 OF 5 SHEETS | 2015 PROJECT (3)



BENCHMARKS

R.R. SPIKE IN UTILITY POLE ON NORTHEAST CORNER OF SWEDE RD. & WACKERLY RD.
ELEV. 682.73

LETTER "M" ON HYDRANT ON SOUTH SIDE OF WACKERLY RD. AT STATION 44+12
ELEV. 677.40

NAIL IN UTILITY POLE ON SOUTH SIDE OF WACKERLY RD. AT STATION 46+70
ELEV. 677.36

LETTER "M" ON HYDRANT ON NORTHEAST SIDE OF WACKERLY RD. AT STATION 56+45
ELEV. 682.78

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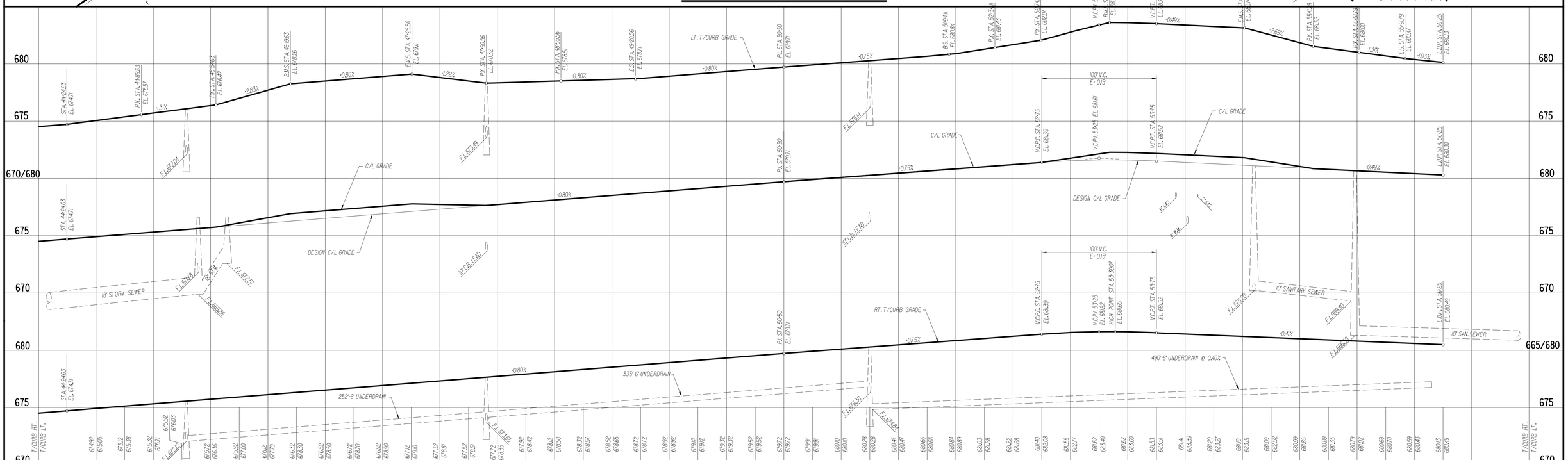
CURVE DATA

CURVE NO. 1	CURVE NO. 2	CURVE NO. 3
Δ= 26°38'02"	Δ= 9°25'22"	Δ= 5°3'4.43"
R= 400.00'	R= 2704.93'	R= 190.00'
T= 94.68'	T= 222.93'	T= 95.93'
CH= 184.27'	CH= 444.35'	CH= 171.27'
L= 185.94'	L= 444.85'	L= 177.67'
P.C.= STA. 45+79.63	P.C.= STA. 47+65.56	P.C.= STA. 53+04.11
P.I.= STA. 46+74.31	P.I.= STA. 49+88.49	P.I.= STA. 54+00.04
P.T.= STA. 47+65.56	P.T.= STA. 52+10.42	P.T.= STA. 54+81.79

SUPERELEVATION DATA

CURVE NO. 1	CURVE NO. 3
BS = 44+24.63	BS = 51+94.11
PX = 44+89.63	PX = 52+34.11
PY = 45+54.63	PY = 52+74.11
BMS = 46+19.63	BMS = 53+34.11
EMS = 47+25.56	EMS = 54+51.79
PY = 47+90.56	PY = 55+11.79
PX = 48+55.56	PX = 55+51.79
ES = 49+20.56	ES = 55+91.79



DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS
				2006	INSTALLED 16" DI. WATER MAIN ON SWEDE	2002	RECONSTRUCTED STREET FROM
					AVE. AND CONNECTED TO THE EXISTING 12"		STA. 44+25 TO STA. 56+25 IN 2002.
					DI. WATER MAIN CROSSING UNDER HWY. U.S.-10		
					TO WACKERLY ST.		
						1/2002	DGN. BY: J.J.M./R.L.C. DR' BY: R.L. COLBECK
							SCALE: 1" = 40' HOR'. 1" = 4' VERT'.

CITY OF MIDLAND, MICHIGAN
ENGINEERING DEPARTMENT

COMBINED PLAN

WACKERLY STREET

JEFFERSON AVE. TO SWEDE RD.

SHEET 5 OF 5 SHEETS | 2015 PROJECT (3)

CITY OF MIDLAND, MICHIGAN
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CITY OF MIDLAND, MICHIGAN
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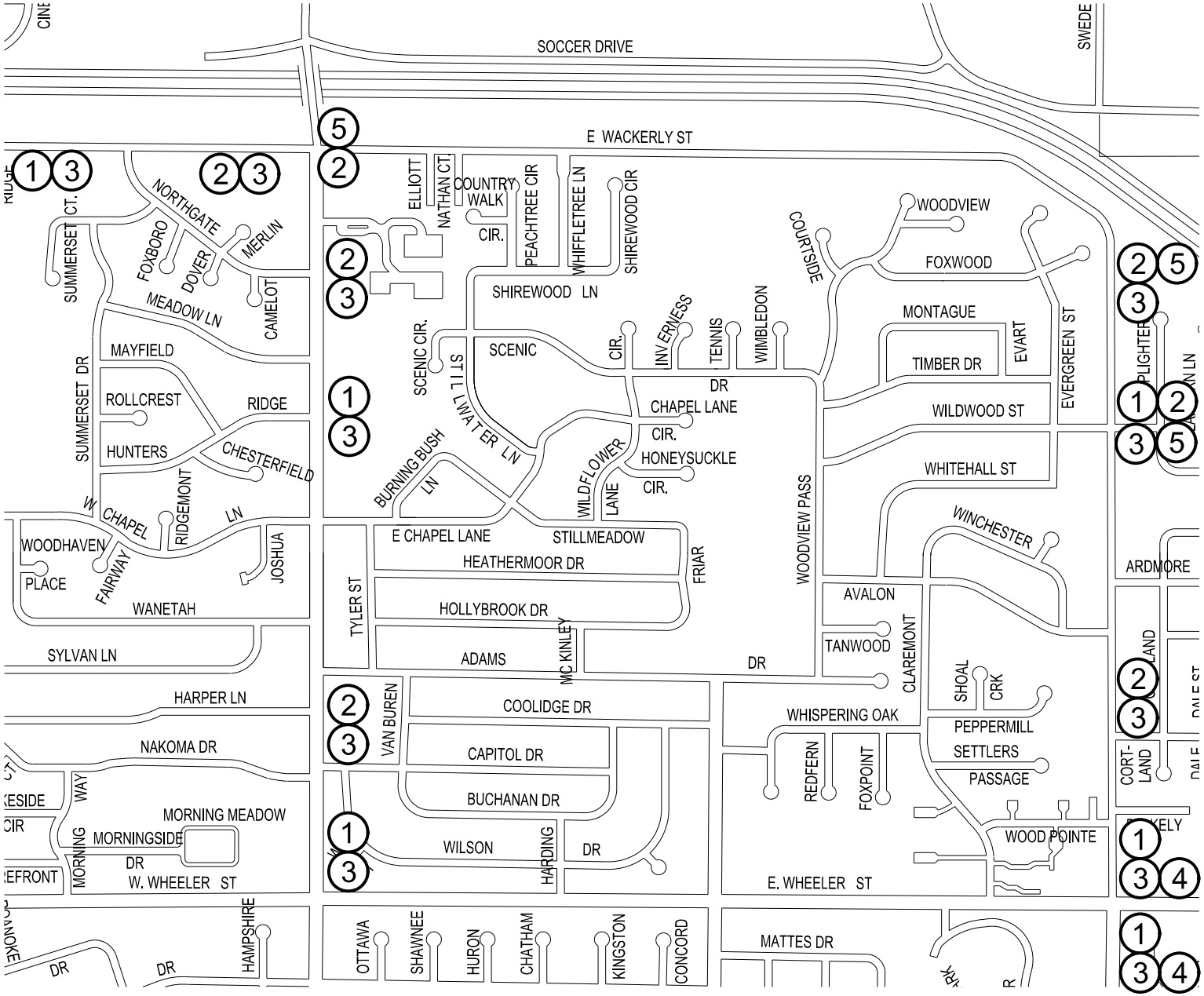

1 ROAD WORK AHEAD

2 ROAD CLOSED TO THRU TRAFFIC

3 E. WACKERLY

4 SEEK ALT ROUTE

SIZE= 24"x24"

5 1-TYPE III BARRICADE

N

E. Wackerly Signage Plan for Cold milling and Paving Operations